

CLAIMS

1. A fuel pressure detector for a common rail type fuel injection apparatus, the fuel pressure detector disposed in the common rail type fuel injection apparatus for detecting a common rail fuel pressure, the common rail type fuel injection apparatus being equipped with a fuel pump for pressure-feeding fuel, a common rail for storing fuel pressure-fed from the fuel pump, and fuel injection valves for injecting fuel supplied from the common rail, the fuel pressure detector comprising:
 - cylinder number judgment means for judging a cylinder number of the engine;
 - crank angle detection means for detecting a crank angle;
 - pressure detection means for detecting the common rail fuel pressure every given crank angle in response to an output signal from the crank angle detection means; and
 - storage means for storing the cylinder number, the crank angle and the common rail fuel pressure by associating them with one another in response to outputs from the cylinder number judgment means, the crank angle detection means and the pressure detection means.
2. A fuel pressure detector for a common rail type fuel injection apparatus, the fuel pressure detector disposed in the common rail type fuel injection apparatus for detecting the common rail fuel pressure, the common rail type fuel injection apparatus being equipped with a fuel pump for pressure-feeding fuel in a plurality of

- steps and raising the common rail fuel pressure to a given fuel injection pressure at the end of the final pressure feed step, a common rail for storing fuel pressure-fed from the fuel pump, and fuel injection valves for injecting fuel supplied from the common rail,
- 5 the fuel pressure detector comprising:
- cylinder number judgment means for judging a cylinder number of the engine;
 - crank angle detection means for detecting a crank angle;
 - pressure detection means for detecting the common rail fuel pressure every given crank angle in response to an output signal from the crank angle detection means;
 - storage means for storing the cylinder number, the crank angle and the common rail fuel pressure by associating them with one another in response to outputs from the cylinder number judgment means, the crank angle detection means and the pressure detection means; and
 - data discrimination means for discriminating, from among data stored in the storage means, data related to the common rail fuel pressure during the time period from after fuel pressure feed in the step prior to the final pressure feed step until before fuel pressure feed in the next step.
3. The fuel pressure detector for a common rail type fuel injection apparatus according to claim 2, wherein the data discrimination means are configured to discriminate data related to the common rail fuel pressure during the time period from after fuel pressure feed in the step one step preceding the final pressure feed
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step until before fuel pressure feed in the final pressure feed step.

4. A fuel pressure detector for a common rail type fuel injection apparatus, the fuel pressure detector disposed in the common rail type fuel injection apparatus for detecting a common rail fuel pressure, the common rail type fuel injection apparatus being equipped with a fuel pump for pressure-feeding fuel, a common rail for storing fuel pressure-fed from the fuel pump, and fuel injection valves for injecting fuel supplied from the common rail, the fuel pressure detector comprising:
 - pressure detection means for detecting a common rail fuel pressure at each elapse of a given time; and
 - storage means for storing the common rail fuel pressure at each elapse of a given time in response to output from the pressure detection means.
5. The fuel pressure detector for a common rail type fuel injection apparatus according to claim 4, further comprising crank angle detection means for detecting a crank angle, wherein the pressure detection means are configured to initiate, in response to an output from the crank angle detection means, the detection start timing for the common rail fuel pressure at each elapse of a given time based on the crank angle.
- 25 6. A fuel pressure detector for a common rail type fuel injection apparatus, the fuel pressure detector disposed in the common rail type fuel injection apparatus for detecting the common rail fuel

pressure, the common rail type fuel injection apparatus being equipped with a fuel pump for pressure-feeding fuel in a plurality of steps and raising the common rail fuel pressure to a given fuel injection pressure at the end of the final pressure feed step, a

- 5 common rail for storing fuel pressure-fed from the fuel pump, and fuel injection valves for injecting fuel supplied from the common rail, the fuel pressure detector comprising:

crank angle detection means for detecting a crank angle; and
pressure detection means for detecting, in response to an

- 10 output signal from the crank angle detection means and every given crank angle, a common rail fuel pressure during the time period from after fuel pressure feed in the step prior to the final pressure feed step until before fuel pressure feed in the next step.

- 15 7. The fuel pressure detector for a common rail type fuel injection apparatus according to claim 6, wherein the pressure detection means are configured to detect the common rail fuel pressure every given crank angle during the time period from after fuel pressure feed in the step one step preceding the final pressure feed step until before fuel pressure feed in the final pressure feed step.

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25 8. A common rail type fuel injection apparatus equipped with the fuel pressure detector according to any one of claims 1 to 7, wherein fuel supplied from the common rail is injected from fuel injection valves to a combustion chamber.